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Psychoeducation for hypochondriasis: A comparison of a cognitive-behavioural approach and a problem-solving approach

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Abstract

In this study, two 6-week psychoeducational courses for hypochondriasis are compared, one based on the cognitive-behavioural approach, and the other on the problem-solving approach. Effects of both courses on hypochondriacal complaints, depression, trait anxiety, and number of problems encountered in daily life, are measured pre-treatment, post-treatment, and at 1- and 6-month follow-up. Participants ($N = 48$, of whom 4 dropped out), suffering from DSM-IV hypochondriasis, were randomized into one of the two course conditions.

Results showed beneficial effects of both courses. Few differential treatment effects were found: in both conditions all effect measures decreased significantly over time ($p < 0.01$). However, between- and inter-individual variability in decrease-patterns was of considerable size, leading to large deviations from the mean pattern. Acceptability and feasibility of both courses were rated highly by their respective participants.

It is concluded that both courses can be considered equally beneficial and effective over time, with the effects evident immediately after treatment and maintained over the follow-up period.

Keywords: Hypochondriasis; Psychoeducation; Cognitive-behavioural treatment; Problem-solving; Multilevel analysis

Introduction

Hypochondriacal patients suffer from the fear or conviction of having a serious physical disease. This fear or conviction is based on the misinterpretation of bodily symptoms (APA, 1994). The consensus among practitioners used to be that these patients were very difficult to treat with psychological interventions. Recently, this view has changed, and several studies suggest the effectiveness of cognitive and/or behavioural

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interventions (Barsky & Ahern, 2004; Visser & Bouman, 2001; Warwick, Clark, Cobb, & Salkovskis, 1996; for a recent overview see Taylor & Asmundson, 2004). Cognitive-behavioural therapy (CBT) for hypochondriasis is usually based on a cognitive model (Warwick & Salkovskis, 1990), which focuses on the various concepts that seem to maintain or even bring about hypochondriacal complaints: the misinterpretation of bodily symptoms, anxiety, selective attention for bodily sensations, and checking and/or avoidance behaviour. The treatment goal is a change in hypochondriacal cognitions and behaviour.

Another form of treatment with known beneficial effects is psychoeducation, which is among the most effective of the evidence-based practices that have emerged in both clinical trials and community settings (Lukens & McFarlane, 2004). Historically, psychoeducation has been described as the teaching of personal and interpersonal attitudes and skills which the individual applies to solve present and future psychological problems (Guerney, Stollak, & Guerney, 1971). It regards people who seek help as 'participants' rather than as 'patients' or 'clients', and 'therapists' as 'teachers'. Its original goal is to move participants away from the medical model. Furthermore, psychoeducation reflects a paradigm shift to a more holistic and competence-based approach (Marsh, 1992).

The psychoeducational format has often been combined with CB theory, and is usually disseminated in the form of short-term, focused courses, aimed at people who function relatively well, to teach them about their disorder. Barsky, Geringer, and Wool (1988) were the first to propose a psychoeducational course for hypochondriasis, and their suggestion was followed by several others (Avia et al., 1996, 1977). The course developed by Barsky et al. (1988) is a cognitive-educational treatment, consisting of group training on the perception and interpretation of physical symptoms. It comprises six weekly meetings, during which six to eight patients receive information about factors that can enhance or prolong somatic problems, such as cognition and symptom attribution, and dysphoric affect (Barsky et al., 1988). Stern and Fernandez (1991) found the treatment, in a group of six participants, to be successful in reducing complaints such as medical consultations and time spent thinking about disease. They did not find a significant decrease in measured anxiety and depression parameters. Avia et al. (1997) implemented the course in Spain, with modified examples, exercises and therapeutic homework. They reported beneficial effects in a group of 17 students, of whom only eight actually suffered from DSM-III-R hypochondriasis. After making considerable adaptations, Bouman applied the course in The Netherlands. This community-based course was studied in an uncontrolled trial (Bouman, 2002), and in a waiting list-controlled trial (Bouman & Polman, submitted). A total of 27 DSM IV-diagnosed hypochondriacal participants (APA, 1994) were included in the first, and 53 in the second study. The results support the notion that this programme leads to significantly reduced hypochondriacal complaints, depressive complaints, medical services utilisation, and trait anxiety. These improvements were maintained at six months follow-up. In the waitlist-controlled study (Bouman & Polman, submitted), the course also outperformed the passage of time.

So far, psychoeducation seems to be successful in mitigating hypochondriacal and comorbid complaints in hypochondriacal populations. Although most studies mentioned earlier used small sample groups without control groups, a case has been made for the internal validity of psychoeducation. Moreover, psychoeducational courses have been proven to outperform mere passage of time (Bouman & Polman, submitted). However, little is known about its construct validity, i.e. the question whether the relation between the intervention and behaviour change is due to the construct given by the investigator (Kazdin, 1998). In the context of individual treatment, the question of construct validity was studied earlier by Clark et al. (1998). They compared individual CB treatment to individual behavioural stress management, finding both approaches to be equally powerful in reducing hypochondriacal complaints at 1-year follow-up of both treatments.

To seek an answer to the question of construct validity, we decided to compare the CB psychoeducational group treatment with problem solving (PS), delivered in a similar format. The PS course was specifically designed for the purpose of this study. Its content was based upon the social PS approach (D'Zurilla & Nezu, 1999) that involves the application of four major PS skills: problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification. The PS approach used in this study is model-based, structured, and directive, to ensure its format to be similar to that of the CB-course's, and have them differ only in specific content (see Method for more details). Our main reason for choosing PS is that this approach puts hypochondriacal complaints into a broader context. All aspects of life,

including possible comorbid depression, anxiety, and relationship problems, can be considered in PS treatment, not just hypochondriacal complaints. These problems are thought to play a maintaining and antecedent role, and once they are reduced, this is assumed to have a positive effect on hypochondriasis. It should be noted that we did not aim to test the PS model per se, but only its approach in a psychoeducational framework.

Therefore, in this study it is hypothesized that the psychoeducational approach in itself has beneficial effects over time, implying a significant improvement on effect measures for both the CB- and the PS-course. In addition, the CB-course is expected to lead to a greater reduction of hypochondriacal symptomatology, because of its more specific focus on this disorder.

Method

Recruitment, screening and randomization

Participants were recruited by notifying the local press, local radio networks, general practitioners (GPs), and low-threshold general health care facilities several times over a period of 3 years (1999–2001). The desired sample size was set at 25 participants per course condition, which was based on prior experience with this course. The course was introduced as a way of learning how to handle health anxiety and to gain insight into hypochondriacal complaints. It was stated specifically that the course was open to self-referral, and that the course should not be perceived as group therapy (Bouman, 2002). This effort yielded 83 respondents.

The potential participants were screened for psychopathology during a structured 30 min telephone interview, which is a condensed version of the Anxiety Disorders Interview Schedule (Bouman, De Ruiter & Hoogduin, 1997; DiNardio, Brown, & Barlow, 1994). This instrument screens for DSM-IV (APA, 1994) somatoform-, anxiety- and mood-disorders. Participants were also asked about previous psychological treatment. The interview led to an evaluation of the presence or absence of any of the disorders mentioned above.

Inclusion criteria were: (1) the presence of a DSM-IV diagnosis of hypochondriasis, (2) being over 18 years old, (3) speaking Dutch, and (4) willingness to participate actively in the course. Exclusion criteria were: (1) the presence of other DSM-IV Axis I disorders more prominent than hypochondriasis, (2) the presence of a serious somatic disease that is the focus of the hypochondriacal concern, and (3) a previous or concurrent CB treatment for hypochondriasis. The participants using psychotropic medication (antidepressants, tranquillizers, or sleep medication), when entering the study (15 of the completers), were asked to keep their dosage constant.

Informed consent was obtained by first giving potential participants information about the nature of the study, and then informing them they were free to stop their participation in the research at any given time, without this interfering with their participation in the course. They then were asked if they agreed to these terms. None of the potential participants refused to participate in the study.

Participants were randomly assigned to either the CB-course, or the PS-course, by order of application: once six to eight participants had applied, and had been included, either a CB- or a PS-course started. This randomization was undertaken irrespective of patient characteristics, and was performed by the first author. The courses were taught at a Home Care organization, in cooperation with the University of Groningen, where the research was conducted.

Participants

Of the 83 people interested in the courses, 35 were not included in the study, for the following reasons: four of them preferred individual treatment, six of them were already treated with CBT elsewhere, four were unable to attend, three felt that their complaints were not severe enough, seven had other primary complaints (mostly panic disorder or depression), another four we were unable to contact after the telephone interview, five were no longer interested, and the Dutch linguistic proficiency of two of them was not sufficient enough to enter the course.

The 48 remaining participants were divided into six groups (three PS-groups, and three CB-groups) of 5–8 participants. Four (8.3%) participants dropped out of the course, after the first or following sessions (one in the PS-course, and three in the CB-course). Reasons for drop-out were predominantly unrelated to the course: only one participant who dropped out (in the CB-condition) stated she did not think the course suited her problems. The others quit the course for different reasons: the second participant who dropped out stated she was too busy, the third decided he wanted individual psychotherapy, and the fourth had to work at his new job the evenings the course took place. Both courses were completed by 22 participants.

Of the CB-group completers, 16 participants were female (72.7%). Of the PS-course completers, 17 participants (77.3%) were female. The mean age of the completers in the CB-group was 41.5 years (SD 13.0, range 21–70), and the mean age of the completers in the PS-group was 40.5 years (SD 11.2, range 23–59). In both conditions, 18 of the 22 (81.8%) completers were cohabitating or married. Of the CB-completers, 4 (18.2%) had a professional or academic educational level, 10 (45.5%) a higher secondary, and 8 (36.4%) a lower secondary level. Of the PS-completers 9 (41.0%) had a professional or academic educational level, 7 (31.8%) a higher secondary, and 5 (22.7%) a lower secondary level. Differences in educational level are non-significant ($\chi^2 = 3.1$, $p = 0.21$).

The mean duration of hypochondriacal complaints of the CB-course completers was 103.1 months (SD 112.4, range 8–500), and of the PS-course completers it was 96.3 months (SD 78.6, range 17–325).

Principal illness fears concerned cancer, heart disease and AIDS: 19 (86.4%) participants of the CB-group and 17 participants (77.3%) of the PS-group feared cancer; 11 (50%) of the CB-completers, and 13 (59.1%) of the PS-completers feared heart disease; 1 (4.5%) of the CB-completers, and 2 (9.1%) of the PS-completers feared AIDS, and 3 (13.6%) of the CB-completers, and 5 (22.7%) of the PS-completers feared other fatal diseases. These percentages exceed 100 because several participants indicated fearing more than one illness. Mann–Whitney tests and *t*-tests revealed no significant differences between CB- and PS-completers on any of these biographical variables.

Several comorbid complaints were reported by the participants, and are summarized below. Ten (45.5%) of the completers in the CB-course, versus 5 (22.7%) of the PS-condition ($\chi^2 = 2.5$, $p = 0.11$), suffered from panic attacks; 2 participants (9.1%) in the CB-group, versus 5 participants (22.7%) in the PS-group ($\chi^2 = 1.5$, $p = 0.22$), suffered from agoraphobic complaints; 4 participants (18.2%) in the CB-condition, versus 7 (31.8%) in the PS-condition ($\chi^2 = 1.1$, $p = 0.30$), suffered from general anxiety complaints; 12 completers (54.5%) in the CB-course, versus 10 in the PS-group ($\chi^2 = 0.4$, $p = 0.55$), suffered from specific phobia complaints; 9 (41.0%) completers of the CB-course, versus 6 (27.3%) of the completers in the PS-group ($\chi^2 = 0.9$, $p = 0.34$), suffered from social phobic complaints; 2 (9.1%) completers in the CB-condition, versus none of the completers on the PS-condition ($\chi^2 = 2.1$, $p = 0.15$), suffered from obsessive–compulsive complaints; 7 (31.8%) of the completers in the CB-course, versus 5 (22.7%) of the completers of the PS-group ($\chi^2 = 0.5$, $p = 0.50$), suffered from depressive complaints. A substantial number of participants suffered from more than one anxiety or depressive complaint. Because all of these participants stated that their primary complaint was hypochondriasis, they were included in this study after being informed that hypochondriacal complaints would be the sole focus of the course.

Procedure

There were several similarities between the two approaches. They both departed from explicit models: (1) a PS model, and (2) a CB model. The courses were implemented as six 2-h sessions, each of those consisting of a mixture of mini-lectures, demonstrations, video illustrations, focused group discussions and brief exercises. In order to increase personal relevance and active mastery of the information provided, the facilitators tried to elicit as many examples and responses as possible from the participants themselves. Sessions 1–5 were followed by brief, optional, homework assignments. In both courses, the model unfolds gradually over the six sessions, with the general model presented by the facilitators at the beginning, and the personalized model presented by the participants at the end. A booster session was held 4 weeks after session 6, with an open format: the participants decided about the topics for discussion, and were free to ask questions about the theory at hand.

Each group was coached by two facilitators. The group of facilitators consisted of one Associate Professor of Clinical Psychology (second author) and several graduate students of clinical psychology (six females

(among whom the first author) and one male, all in their early twenties). All facilitators had some experience with individual CB treatment for hypochondriasis; some had previous experience with coaching courses. A detailed session-by-session manual was provided, and used by the facilitators. They were supervised weekly by the second author, to discuss progress, specific content of the sessions, and to detect and solve possible problems. These supervision sessions also served as a way to qualitatively assess adherence to the manual. Having two facilitators teaching the course served as a safeguard for treatment fidelity, as did having them write down detailed session reports.

The courses differed in specific content, which will be described below.

The CB-course (Bouman, 2002; Bouman & Buwalda, submitted) departs from an explicit CB model for hypochondriasis (Warwick & Salkovskis, 1990; Bouman & Visser, 1998). Session 1 (What is hypochondriasis?) provides an introduction to the cognitive behavioural model (i.e. a vicious circle) and an orientation towards maintaining rather than aetiological factors. In session 2 (The role of your thoughts) the role and the contents of catastrophical misinterpretations are addressed as well as ways to challenge these. Session 3 (Attention and illness anxiety) addresses the nature and the effects of selective attention as a maintaining factor. Session 4 (Safety behaviours and illness anxiety) highlights behavioural aspects of hypochondriasis, such as safety behaviours, avoidance, asking for reassurance, and checking. Session 5 (Stress and bodily symptoms) elaborates on the contribution of bodily stress symptoms to misinterpretations and to increased physical dysfunctioning. Finally, in session 6 (Your own vicious circle) participants use the previous information to construct their own idiosyncratic vicious circle and deduct possible interventions.

The PS-course was designed around a flow-chart consisting of seven different steps, with the two-fold aim to (1) provide insight into the wider context of hypochondriasis, such as everyday problems, and (2) to help participants find a structured method (a) how to identify problems and define them, and (b) how to solve problems. The step-by-step content of this course was as follows: session 1, (What is hypochondriasis?) provided an introduction to the PS flow-chart and its relations with hypochondriasis, as well as an orientation into how general problems can maintain and elicit hypochondriacal complaints. During session 2, (Problem description and goal-setting), the participants were taught how to define the exact problem at hand, and were asked what they wanted to achieve when solving a problem, thereby inviting them to generate some thoughts about how a problem can be solved. Session 3 (Which resources do you have?), addressed the means participants had to solve their problems effectively. Session 4 (Generating solutions), aimed to teach participants how to generate different solutions, obtained through a brainstorm technique. In session 5 (Choosing and applying a solution), participants were taught how to pick the best or most efficient solution, and apply it to the problem. Furthermore, during this session they were taught how an evaluation can show you whether a problem is solved. The last session, number 6 (Your own PS model), focused on the participants applying the entire flow-chart to one of their own problems, and on working through all its steps. During the PS-course, the emphasis was on those problems people can encounter in everyday life, one of them being hypochondriacal complaints. Therefore, hypochondriasis was only discussed in terms of being a problem, and was not given more attention than the other everyday problems participants brought up for discussion. Some general problem areas that were dealt with were described in the course book, (e.g. having a financial problem), and specific examples of problems that were brought up by participants were: not knowing whether to move house or not, a conflict with a partner or relatives, problems at work, and not being able to decide which bicycle would be the best buy.

Measurements

Repeated measures were taken pre-treatment, post-treatment, at 4 weeks after the course had ended, and at 6 months after the ending of treatment.

Primary outcomes

Hypochondriacal complaints. The Groningen Illness Attitude Scale (GIAS; Bouman, 2002; Visser, 2000; Visser & Bouman, submitted) is a 42-item self-report questionnaire that measures 4 aspects of hypochondriasis: 'disease conviction' (15 items; $\alpha = 0.92$), 'bodily symptoms and complaining' (12 items; $\alpha = 0.88$), 'health anxiety and thanatophobia' (8 items; $\alpha = 0.85$), and 'checking and avoidance behaviour'

(7 items; $\alpha = 0.71$) (Bouman, 2002). The GIAS is based on the Illness Attitude Scales (Kellner, 1986) and the Whitely Index (Pilowsky, 1967). The applicability of each item during the 7 days prior to assessment is scored on a 5-point scale (from 1 = 'never', to 5 = 'nearly always'). The questionnaire has satisfactory discriminative validity, and strong convergent validity.

Depression. Beck's Depression Inventory (Beck, Rush, Shaw, & Emery, 1979; Dutch version: Bouman, Luteijn, Albersnagel, & Van der Ploeg, 1985) measures the severity of depressive symptoms and consists of 21 groups of 4 statements describing depressive symptoms, from which the patient chooses the most applicable.

Trait anxiety. The trait scale of the Dutch-authorized version of the State-Trait Anxiety Inventory (Dutch version: Van der Ploeg, Defares, & Spielberger, 1980) was used. This scale consists of 20 items and measures inter-individual differences in anxiety.

Number of problems. The Problem Areas Questionnaire, designed for the purpose of this study, comprises four main problem areas people may encounter in daily life: 'Personal problems' (14 items, e.g. 'feeling guilty about something'), 'Interpersonal problems' (13 items, e.g. 'having a problem with your partner'), 'Work related problems' (9 items, e.g. 'being too busy at work'), and 'Various other problems' (6 items e.g. 'problems with money'). The items were scored on a 5-point scale (from 1 = no problem, to 5 = very much a problem).

Treatment process measures

A process of change-questionnaire was administered at the end of each session, asking the participants to judge the session on several aspects, such as clarity of the presented theory and opportunity to interact with other participants. Scales from 1 (= extremely poor) to 10 (= excellent) were used. After the first session, additional questions were asked about how acceptable the participants would rate the approaches, how much participants expected to benefit from the course, and how credible the rationale seemed to the participants. For these questions, scales from 1 (= not at all) to 10 (= very much) were used. Furthermore, session attendance was recorded weekly by the facilitators.

Course evaluation was carried out at post-assessment, using questions about the course as a whole, about each individual session, and about the facilitators. Scales from 1 (= extremely poor) to 10 (= excellent) were used.

Analytic plan

Multilevel analysis

Multilevel analysis was used to answer the question whether (a) the psychoeducational treatment was effective for hypochondriacal complaints, and (b) the two approaches differed in effectiveness.

Multilevel models were estimated for the four outcome measures for hypochondriacal complaints, depressive complaints, trait anxiety, and number of problems experienced in daily life. The first step in the modelling process was to find an adequate representation of the variance structure of the repeated assessments, using dummy variables for the second through fourth assessment. Furthermore, the effect of treatment was investigated, using effect coding with weights, $-1/2$ for the PS-group and $1/2$ for the CB-group, plus their interaction with the dummy variable for time. Thereafter it was checked whether the model could be improved by gender, age, and level of education covariates.

Theoretically, a third level could have been included in the model, representing the variable 'group'. However, due to the small amount of groups in this study, this was not a feasible option.

In multilevel analysis, the statistical significance of single fixed effects is tested by approximate t-tests (Snijders & Bosker, 2000), of which two-sided p-values are reported. The significance of multiple fixed effects and of random effects is tested using a likelihood ratio test, based on the deviance, defined as -2 times the log likelihood value. The difference in deviance of two nested models (i.e. models that only differ with respect to the variable(s) to be tested) follows a χ^2 distribution, with as many degrees of freedom as the number of parameters to be tested.

Attendance and evaluation

The attendance and evaluation of the participants of both courses are described by their means and standard deviations. Furthermore, the difference between groups with reference to attendance and evaluation was tested using *t*-tests.

Clinical significance

Clinical significance was tested with the reliable change index (RCI). This index (Jacobson & Truax, 1991) was designed to determine whether the magnitude of change for a given participant is statistically reliable, and shows whether change reflects more than the fluctuations of a measuring instrument. The formula used in calculating the RCI is described in Fig. 1.

Furthermore, because there is a twofold criterion for clinically significant change (Jacobson, Roberts, Berns, & McGlinchey, 1999), it was determined whether participants have ended up in a range that renders them indistinguishable from well-functioning people after the bibliotherapy. For that purpose, the participants in this study were compared to a community sample with regard to the GIAS (Visser, 2000), by means of *t*-tests.

Results

Missing data

Missing data occurred in this study: 14 (63.6%) of the 22 completers in the CB-condition returned all four assessments and 19 (81.8%) of the 22 completers in the PS-condition did so. Firstly, those who have not returned all their questionnaires were compared with those who have returned all questionnaires, with regard to their post-assessment by means of *t*-test. The comparisons were made for the four outcome measures: GIAS, BDI, STAI, and PAQ. These tests showed that both groups did not differ significantly at post-assessment (GIAS: $t = 1.4$, $p = 0.17$; BDI: $t = -0.6$, $p = 0.56$; STAI: $t = 0.1$, $p = 0.91$; PAQ: $t = 0.04$, $p = 0.97$).

Secondly, it was studied whether they who had not returned all questionnaires of the CB-group differed from they who had not returned all the questionnaires of the PS-group. When analysed with a Mann–Whitney test, it was found that these two groups did not differ either on any of the outcome measures (GIAS: $Z = -0.2$, $p = 0.83$; BDI: $Z = -1.4$, $p = 0.2$; STAI: $Z = -1.3$, $p = 0.18$; PAQ: $Z = -0.3$, $p = 0.73$). These results should be viewed with caution, because 8 participants had not returned all measurements in the CB-group, versus 3 in the PS-group, which makes comparison difficult.

Outcome of the multilevel analyses

Results of the multilevel analyses are shown in Table 2. Because preliminary analyses showed that none of the biographical variables (age, gender, and level of education) had a significant effect, they were not included in the descriptions of the multilevel analyses, or in Table 1.

Hypochondriacal complaints

In the analysis, the total-score on the GIAS is implemented, because a preliminary analysis showed that the four subscales described in the method section displayed a similar pattern of decrease over time.

$$RC = (x_2 - x_1) / S_{diff.}$$

$$S_{diff.} = \sqrt{2(S_E)^2}$$

Fig. 1. $RC = (x_2 - x_1)/S_{diff.}$ $S_{diff.} = \sqrt{2(S_E)^2}$ RC = reliable change; x_1 = a participant's pre-test score; x_2 = the same participant's post-test score; $S_{diff.}$ = the spread of the distribution of change scores that would be expected if no actual change had occurred; S_E = the standard error of measurement.

Table 1
Multilevel models for the development of the GIAS, the BDI, the STAI, and the PAQ over time and between conditions

Fixed effects	GIAS			BDI			STAI			PAQ		
	Estimate	SE	*t*	Estimate	SE	*t*	Estimate	SE	*t*	Estimate	SE	*t*
Intercept (mean score at t1)	92.16	4.07		14.48	1.30		54.86	1.63		79.14	2.75	
Mean difference at t2 (vs. t1)	−20.17	3.50	−5.76***	−4.09	0.87	−4.70***	−6.12	1.38	−4.43***	−2.20	1.72	−1.28
Mean difference at t3 (vs. t1)	−25.46	3.77	−6.75***	−5.10	0.92	−5.54***	−7.23	1.47	−4.91***	−6.06	1.85	−3.28**
Mean difference at t4 (vs. t1)	−29.72	3.90	−7.62***	−6.00	0.96	−6.63***	−6.63	1.55	−4.28***	−9.98	2.91	−3.43***
Treatment (PS vs. CB)difference at t1	−4.96	8.15	−0.62	0.32	2.59	0.12	4.00	3.26	1.23	2.91	5.50	0.53
Treatment (PS vs. CB)difference at t2	10.75	7.00	1.54	3.27	1.75	1.87	6.59	2.75	2.40**	8.33	3.45	2.42**
Treatment (PS vs. CB)difference at t3	10.71	7.54	1.42	0.76	1.85	.41	3.54	2.94	1.20	−.37	3.70	−0.10
Treatment (PS vs. CB)difference at t4	4.10	7.81	0.52	−.089	1.91	−.046	−5.14	3.10	−1.66	.076	3.90	0.019
Random effects						χ^2						
Between individual variance	466.69	117.06		31.03	7.96		76.17	18.97		268.55	61.56	
Additional variance at t1Covariance				4.91	6.25	9.1						
				11.96	4.91							
Measurement variance	264.51	35.66		14.10	2.39		40.91	5.51		64.21	8.66	

Note. CB = Cognitive-behavioural group; PS = Problem-Solving group; t1 = pre-treatment assessment; t2 = post-treatment assessment; t3 = follow-up at 1 month; t4 = follow-up at 6 months; SE = Standard Error; * = $p<.05$; ** = $p< .01$; *** = $p<.001$.

Table 1 shows a substantial decrease in hypochondriacal complaints between assessment 1 and 2 ($t = -5.8$, $p<0.0001$). Scores on the GIAS decrease further at assessment 3 and 4. Differences between the courses are non-significant at all times of assessment.

The between-individual variance of the random effects (466.69, implying a standard deviation of almost 22 points) demonstrates that the differences in mean scores of all participants are considerable, and of approximately the same size as the mean improvement. The measurement variance (indicating differences over time within participants) is smaller (264.51), with a standard deviation of approximately 14), but also considerable.

Depressive complaints

Table 1 indicates that, between assessments 1 and 2, the mean score of the BDI drops significantly ($t = -4.7$, $p<0.0001$). At assessments 3 and 4, the scores decrease further. For condition, no significant interaction effects were found, indicating that both courses perform equally well.

The measurement variance at the first assessment is somewhat larger than at the later time points (approximately 20 instead of 14). Again, the between-individual variance is larger (31.03) than the measurement variance (14.89).

Trait anxiety

Table 1 shows a significant decrease in scores on the STAI between time of assessment 1 and 2 ($t = -4.4$, $p<0.0001$). A significant difference in decrease between the two groups was found at assessment 2, ($t = 2.4$, $p = 0.01$), indicating that the complaints in the CB-group on average have significantly decreased more, immediately after the course, than those in the PS-group. The between-individual variance (76.17) is larger than the measurement variance (40.91) and its standard deviation of more than 8 larger than the mean improvement.

Number of problems experienced in daily life

Table 1 shows that, between assessments 1 and 2, scores decrease slightly, but not significantly ($t = -1.3$, $p<0.15$). However, they have decreased significantly at time 3 ($t = -3.3$, $p<0.002$), with reference to time 1. This decrease has continued at time 4.

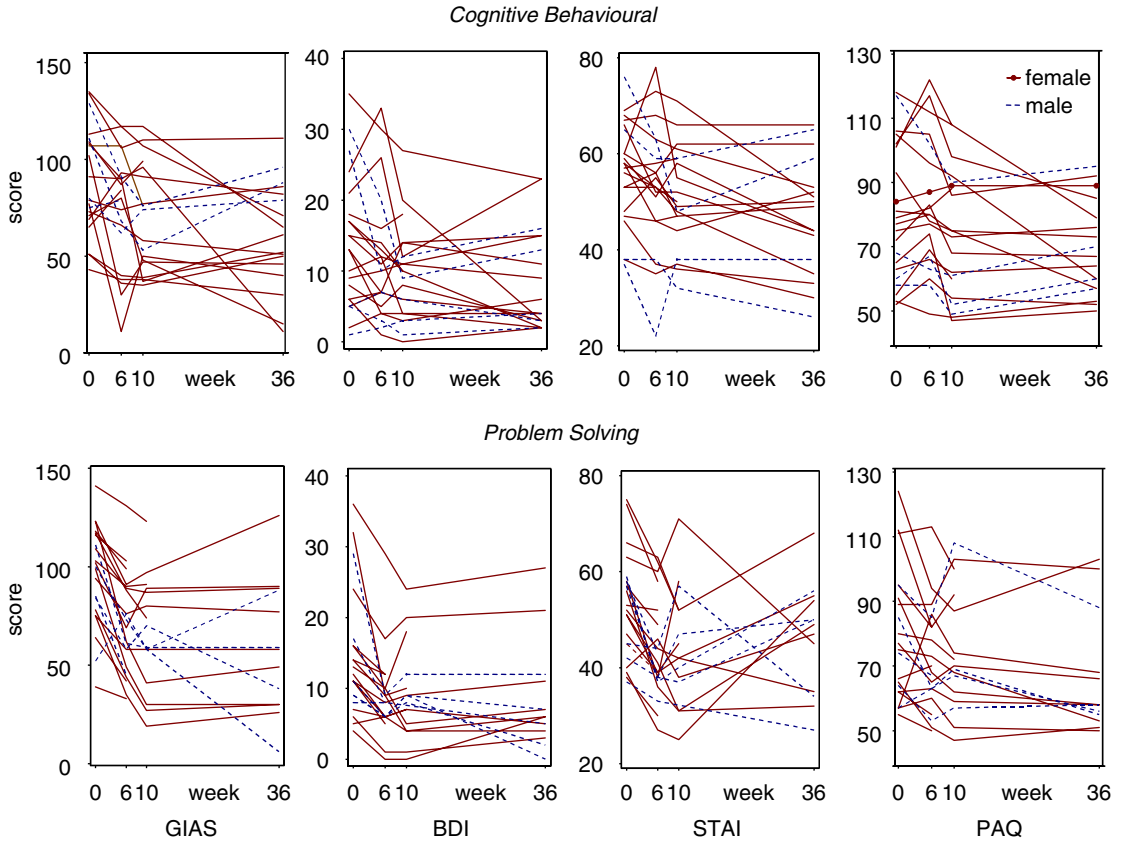
A significant difference between the groups was found at assessment 2 ($t = 2.4$, $p = 0.01$), indicating that the PS-group participants on average experience more problems in daily life right after the course than the CB-group participants do.

The between-individual variance for this measure is quite large (268.6), whereas the measurement variance (64.2) is relatively small.

Inter-individual differences

The between-individual variance, described above and shown in Table 1, indicates there are large differences between participants on all measurements. These differences are illustrated in Fig. 2.

The inter-individual differences are of such size that in spite of an average decrease over time of all measures, it is possible that an individual does not show an improvement at all or even shows an increase of complaints.



STAI = Spielberger State-Trait Anxiety Inventory; PAQ = Problem Area Questionnaire; week 0 = pre-treatment assessment; week 6 = post-treatment assessment; week 10 = one-month follow-up; week 36 = six-month follow-up.

Fig. 2. Individual differences between male and female participants on the four times of assessment of hypochondriacal complaints, depression, trait anxiety, and problems experienced in daily life. Note. GIAS = Groningen Illness Attitude Scale; BDI = Beck Depression Inventory; STAI = Spielberger State-Trait Anxiety Inventory; PAQ = Problem Area Questionnaire; week 0 = pre-treatment assessment; week 6 = post-treatment assessment; week 10 = 1-month follow-up; week 36 = 6-month follow-up.

Effect sizes within groups

The differences within the groups (when contrasting pre-treatment with post-treatment, first follow-up and second follow-up) are further illustrated by showing their effect sizes (Cohen's *d*) in Table 2.

All within CB-group effect sizes, except for the PAQ, are medium to large, and consistently larger than the effect sizes within the PS-group. Exceptions are the effect sizes for the BDI and STAI within the PS-group at the second follow-up.

Attendance and evaluation of the courses

Both programs were high in acceptability, were attended equally well, and were largely evaluated equally positive. The mean attendance rate was 90.8% (range 77–100%) for the CB-group, and 88.6% (range 68.2–100%) for the PS-group.

Immediately after the sessions, CB-completers award the separate sessions a mean score of 8.3 out of 10 (range 8–10, SD = 0.58), and PS-completers rate theirs with a mean of 7.8 (range 6–9, SD = 0.75), ranging from 1, meaning 'very bad', to 10 meaning 'excellent'. When analysed with a *t*-test, this is a small, but significant difference ($t = 2.4$, $p = 0.02$, $d = 0.58$, 95% CI = 0.076–0.89).

When asked retrospectively, CB-participants awarded the entire course a mean grade of 7.9 (SD = 0.99) out of 10, PS-participants rated theirs on average a 7.2 (SD = 1.9) out of 10. A *t*-test shows that this difference is not significant ($t = 1.4$, $p = 0.16$, $d = 0.59$, 95% CI = −0.27–1.6).

Furthermore, the participants were asked after the first session to rate how much they expected to benefit from their particular course. On a scale of 1 (= not at all) to 10 (= very much), the CB-participants awarded a mean score of 7.3 (SD = 1.4), and the PS-participants awarded a mean score of 7.5 (SD = 1.2) ($t = -0.50$, $p = 0.62$, $d = -0.18$, 95% CI = −1.01–0.61).

Clinical significance analyses

The RCI (see Fig. 1) is used in the present study to determine reliable change for participants in both conditions, with regard to the GIAS. Results have been computed with the use of the Cronbach's alpha of the GIAS at pre-test within this group ($\alpha = 0.95$).

Results show that at post-assessment, 16 (72.7%) participants of the CB-group have achieved reliable change, as have 6 (28.6%) participants of the PS-group. However, at follow-up at 6 months, 8 (57.1%) of the 14 participants returning this questionnaire of the CB-group score within the range of reliable change, whereas 12 (63.2%) of the 19 participants who have returned this questionnaire of the PS-group have achieved reliable change at this point.

As a second way of determining clinical significance, mean scores of participants of both groups were compared to the mean scores of both a community sample norm group, and a patient norm group. CB- and PS-group were taken together, because the groups did not differ significantly on any of the assessments.

The mean scores of the norm groups on the GIAS, as reported by Visser (2000), are: 30.5 (SD = 25.3) for the community sample, and 101 (SD = 25.8) for the patient norm group. Results show that at pre-assessment, the participants of the study differ significantly from the community sample ($t = 14.3$, $p < 0.00$), and differ significantly from the patient norm group ($t = -1.9$, $p < 0.05$), which places them in between both norm groups, with more resemblance to the patient norm group. At 6-month follow-up, it is clear that the participants of this study do not score within the range of the community sample ($t = 7.7$, $p < 0.00$), but gradually over time, they have started to differ more from the patient norm group ($t = -8.3$, $p < 0.00$).

In conclusion, it is clear that clinically significant improvement is achieved, in terms of reliable change for a substantial number of participants, but not in terms of the participants scoring within the range of a community sample. Furthermore, these results should be interpreted with caution because of the missing data occurring in this study.

Table 2
Within-group effect sizes (Cohen's d) of all outcome measures at the different times of assessment

	Post-treatment vs. pre-treatment		One month follow-up vs. pre-treatment		Six months follow-up vs. pre-treatment	
	CB	PS	CB	PS	CB	PS
GIAS	1.01	0.54	1.05	0.73	1.21	1.09
BDI	0.78	0.29	0.67	0.58	0.74	0.81
STAI	0.90	0.29	0.83	0.55	0.55	0.84
PAQ	0.35	0.01	0.18	0.31	0.62	0.62

Discussion

The two central hypotheses of this study were (1) that previously reported beneficial results of the psychoeducational paradigm would be replicated, and (2) that the hypochondriasis specific CB-course would lead to greater improvement than the more general PS-course.

The results showed support for the first hypothesis. The beneficial effects of *both* courses on the GIAS (measuring hypochondriacal complaints), the BDI (measuring depression), and the STAI (measuring trait anxiety) were apparent at post-treatment assessment, and continued at both follow-up assessments. For the PAQ (measuring the number of problems participants experienced in daily life), the effect appeared at follow-up after 1 month and continued thereafter. The number of participants showing reliable change on the GIAS, both at post-assessment and at 6 months follow-up, also indicates that the courses can be considered effective.

In line with the general psychoeducational literature (Authier, 1977; Guerney et al., 1971; Lukens & McFarlane, 2004), these results suggest that general active ingredients of this type of approach are embedded in the *form* of treatment. People take responsibility for their own complaints and are free to learn what they interpret as useful. The increased understanding of complaints psychoeducation brings about could be considered an explanation for the achieved effects. Furthermore, participants seem to benefit substantially from being presented with a model to which they can link their complaints, thereby putting their worries in a different context. This could mean that as long as patients are presented with a credible model, embedded into a psychoeducational paradigm, they will benefit from the course. Another reason why this format may be beneficial is the fact that both courses were presented in groups. Even though this was not researched specifically, statements of participants (e.g. I was so glad to find out I was not the only one suffering from this) led us to believe once again that hypochondriasis is a disorder that can be tackled very well in a group setting.

The second hypothesis of this study was generally not supported. No significant difference in treatment effect was found between the two courses at follow-up assessments after one and 6 months. Two differential time effects, both in favour of the CB-course, were found immediately after the course, notably for trait anxiety and for problems experienced in daily life. This effect of the CB-course on trait anxiety had been found earlier by Bouman (2002). However, the superior effect of the CB-course on the experience of problems in daily life is surprising. An explanation for this finding could be that the PS-group participants, because of their focus on problems during the course, perceived more things in their life as being problematic than their CB-group counterparts. Therefore, right after the course, they may have reported having more problems in daily life, being more aware of these problems. Differential treatment effects are only apparent at the post-treatment assessment, and have disappeared at 1 and 6-months follow up. Therefore, it is concluded that the courses should ultimately be considered equally beneficial. A reason for this finding might be that in both courses the same factors could be responsible for the found therapeutic effect, in this context of education probably especially the so-called learning factors by Lambert and Bergin (1994). Examples of learning factors are advice, corrective emotional experiencing, feedback, insight, and rationale, all factors that implicitly might have played a role during the course. In future studies the contribution of these factors to the course's effect should be investigated.

Acceptability of the programs was high in both groups. This differs from the findings by Clark et al. (1998), who stated that: 'The originally planned comparison treatment was PS, but pilot work revealed that it was not

acceptable to patients' (p. 224). According to the results found in the present study, the PS-course proved to be as acceptable as the CB-course to participants.

Although main effects in this study were beneficial, generalizing these effects is difficult, because the group of patients participating in this study could be a subgroup of hypochondriacal patients. They are self-referred and are often well-functioning with respect to holding jobs and maintaining successful relationships. Furthermore, this group of patients did not need persuasion to adopt a psychological point of view according to their physical complaints, but recognized themselves as being hypochondriacal in advertisements or articles in local newspapers.

In addition, although beneficial mean effects were apparent in this study, that is exactly what they are, *mean* effects. The large differences between participants (illustrated in Fig. 2) show that all participants, whether they were in the CB-course or in the PS-course, differed greatly in the way they benefited from the courses. These large differences between participants might be explained by their variability in complaints, and the many different ways in which hypochondriacal complaints manifest themselves. General clinical implications of this study are also limited because in light of clinically significant change, many participants do achieve reliable change, but still differ considerably from the community sample after following the course.

Furthermore, several participants did not return their questionnaires, resulting in missing data. Although analyses showed non-significant results, there were still substantial differences between completers at pre-assessment who returned their questionnaires once, twice, three times, and four times. The participants who had returned their questionnaires twice (pre and post), seemed to be suffering less from hypochondriacal and depressive complaints at pre-assessment, and reported fewer problems in daily life. This might mean that the missing data might not be missing completely at random, and therefore, the results from the multilevel analyses should be considered with caution.

Some of the differences between individuals could have been a result of participating in different groups, and of having been taught by different facilitators. Some differences were seen between groups, but this could not be analysed using multilevel techniques, because of the small number of groups. Although results show more differences between individuals than between groups, in future research the influence of groups and facilitators should be studied further. This would imply a larger number of groups, and consequently a larger number of participants, which would also provide more insight in the inter-individual differences and the differences between the courses.

The results of this study indicate that several aspects of the treatment of hypochondriasis are in need of investigation. Firstly, more specific research should be done with regard to the construct validity by studying mechanisms of change. Both the results from Clark et al. (1998) and the present study suggest that a structured approach with a clear message (be it behavioural stress management or problem solving) may be thought to increase self-efficacy and thus counteract hypochondriasis. If this is true, what the mechanisms of action are remains the domain of future investigations. Furthermore, external validity is another issue that needs more attention. Therefore, the effectiveness and efficacy of psychoeducational and other forms of treatment should be studied further in the context of regular (mental) health care.

In the challenging area of mitigating hypochondriacal complaints, the results of this study and its predecessors (Bouman, 2002; Bouman & Polman, submitted), are promising. In a cost-effective format, substantial and clinically relevant results can be achieved. The approach has proven to be acceptable to participants, to have a high attendance rate, and few drop-outs. We therefore recommend including psychoeducation for health anxiety in the mental health care delivery system, preferably as one of the first conditions of a stepped care model.

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